

In the first of a three-part series sponsored by MSD Animal Health on enteric health, we look at the issue of vaccination as a control option for coccidiosis

Coccidiosis vaccination

– a realistic option for broilers?

Optimising health status and reducing the risk of disease is vital for flocks to achieve their full genetic potential.

Intestinal health is of paramount importance and maintaining gut integrity throughout the production period is a key objective for both broiler growers and commercial egg producers.

Managing coccidiosis can be challenging, however. This protozoan parasite is persistent, with an intricate and exponential reproductive cycle involving both asexual and sexual stages. Its successful treat-

ment and control requires strategic actions, typically using effective veterinary medicines and stringent hygiene protocols to minimise the risk of “carryover” of oocysts from one crop of birds to another.

Coccidiosis can cause immense intestinal damage, due to its explosive reproductive capacity. The parasite attacks mucosal tissues, invades cells and leaves lesions in the gut, which impair digestion and nutrient absorption. Blood loss and/or dehydration may also contribute to performance losses, and clinical outbreaks may result in high morbidity and mortality rates.

UK field trials show positive benefits

During the past two years, MSD Animal Health has been investigating the clinical and financial benefits of coccidiosis vaccination through a series of field trials with two UK broiler integrators.

The trials are focused on hatchery vaccination programmes using Paracox 5, a live attenuated oral vaccine which will protect chickens against the five species of coccidia that are significant in broilers: *Eimeria acervulina*, *E. maxima* (two strains), *E. mitis*, and *E. tenella*.

The vaccine can be administered in the hatchery to day-old chicks via spray administration at a volume of 0.2ml a bird, before they are despatched to the grower site.

Apart from attempting to deter-

mine the cost benefits of this vaccination strategy, the studies also aim to establish the most appropriate management factors and skills required to optimise immune response in the birds, and to simplify/standardise the vaccine administration process.

Andrew Payne, MSD trials assistant, co-ordinates this long-term project. More than seven-and-a-half million birds have been involved in the trials to date, which are on-going and expanding in size. He believes that a Paracox 5 vaccination programme is a viable coccidiosis control option for broiler producers.

“The trials are ongoing and results are yet to be fully analysed, but regular reviews are showing positive outcomes in terms of pro-



Sub-clinical infection is also common. No clinical signs are seen, but gut damage still occurs and this has a negative impact on FCR, growth and overall flock health. It can also increase a bird’s susceptibility to secondary infections, the most notable being clostridial enteritis. These factors can further exacerbate loss, complicate diagnosis and significantly increase the costs of stabilising health status.

STRATEGIC CONTROL

All farms at risk of coccidiosis should implement a strategic control programme under veterinary

guidance.

Dr Tibor Cserep, technical manager with MSD’s Poultry Team, says that there are two basic options: in-feed anti-coccidial treatments and vaccines that induce immunity to certain coccidial species.

Either may be used alongside thorough hygiene and biosecurity measures and are very effective.

“Currently, the option selected by a poultry business broadly depends on the type of bird farmed. With regard to commercial layer and broiler breeder flocks, protecting young birds through vaccination is a valuable investment, as it

and more whole grains, without impeding broiler performance.

“In many parts of the world there is mounting pressure to reduce the amount of medication used in livestock production,” says Mr Payne. “Some of the conventional treatment and control strategies, which are currently being used on farm, are being questioned and producers are being encouraged to explore alternatives such as vaccination, which at present are not usual practice.

“In the area of coccidiosis control, protecting birds against disease by vaccination is already commonplace in long-lived birds. It is likely that this could become more widely considered as a viable option for broilers in the near future.”

provides lifetime immunity against coccidiosis. Most commercial layers and broiler breeders destined for extensive production systems in the UK are vaccinated with Paracox 8, which provides protection against all coccidial species which could cause disease during the course of their lifetime,” he adds.

However, for most standard broiler producers, in-feed anticoccidial medication is widely regarded as the most economic option. This is because, historically, coccidiosis vaccination has seemed difficult to justify commercially, given the short production period available to realise a return on that investment.

Typically, a prophylactic anti-coccidial programme involving the use of several different types of medicated feed is used throughout the production period. This treatment does not eradicate the parasite, but reduces infection levels, thus controlling the flock’s exposure to the disease challenge, during which some level of immunity is developed.

COCCIDIOSIS VACCINATION IN BROILERS

In spite of the success of in-feed coccidiosis control strategies, as health management evolves and market demands change, a growing interest is developing in the vaccination of standard broilers.

Vaccines are already commonly used in broiler production in many other countries, most notably the USA, where up to 40% of production is typically vaccinated against

coccidiosis.

Sometimes producers choose to use vaccines within a rotation system, where the objective is to re-establish the sensitivity of the coccidia organisms present on the farm to in-feed anticoccidials. Such a strategy helps limit the cost as the vaccine is used for three crops, which breaks the disease cycle.

A medicated feed is then reintroduced for the subsequent three crops. The response to in-feed treatment is usually significantly better following the break during which vaccine is used, because increasing levels of fully susceptible vaccine coccidia start to displace the wild strains on the farm.

However, choosing a vaccination-only strategy can also have advantages over the rotation system, says Dr Cserep. When managed correctly, it will reduce the coccidial field challenge for the long term and a single vaccination given to a day-old chick will protect the bird for the entire broiler cycle – a factor that reduces the potential risk of late coccidiosis outbreaks and additional treatment costs.

It need not be more expensive either. “When potential savings to time/labour and overall health status are considered, then the economics begin to stack up,” says Dr Cserep. “When evaluated on a margin per crop basis, the real cost of a coccidiosis vaccination programme is typically found to be comparable to an in-feed medication strategy,” he suggests.

COCCIDIOSIS

An important disease in poultry

Coccidiosis is caused by coccidial species from the *Eimeria* family of protozoan parasites, which multiply in the gut. It occurs in most species of animal, but different coccidial species are specific to different hosts.

■ *Eimeria acervulina*, *E. maxima*, *E. tenella* and *E. mitis* are pathogenic to chickens and have economic significance in broiler production.

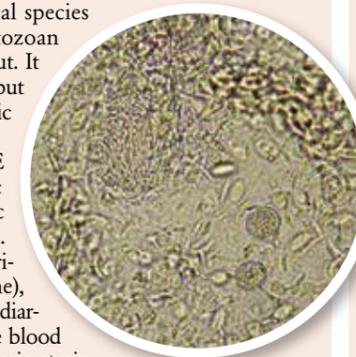
■ Coccidia infections cause enteritis (inflammation of the intestine), which is usually accompanied by diarrhoea that may or may not have blood streaks, depending on the *Eimeria* strain present.

■ Each coccidial reproductive cycle lasts for five-to-seven days and clinical signs are most often observed at around 21-28 days. It takes time for the disease to replicate and build up in sufficient numbers to cause damage to the gut.

■ Poor growth and impaired feed conversion are common and mortality rates are often higher in flocks where the disease is poorly controlled.

■ It is important to identify and treat any infection quickly, before it can spread. Undetected infections can spread swiftly through a flock and can cause losses in productivity and overall health status.

■ Using an appropriate vaccination programme under veterinary guidance, combined with stringent biosecurity protocols, offers an alternative to in-feed anticoccidial control programmes.



WORKING TO PROMOTE HEALTHY PRODUCTION

MSD Animal Health manufactures and supplies a range of products to tackle some common intestinal health problems:

Paracox 5: live coccidial vaccine which protects against coccidiosis caused by the main *eimeria* species affecting broilers

Paracox 8: live coccidial vaccine which protects against coccidiosis caused by the main *eimeria* species affecting layers and broiler breeders

Aviguard: freeze dried natural gut flora to seed the gut with “good” bacteria before periods of stress or after the use of antibiotics

The MSD team is available for assistance and advice with the implementation of vaccination and intestinal health programmes for vets and producers. You can contact the team via our veterinary support group on 01908 685 685.

MSD products are mainly prescription only medications and are provided via your veterinary surgeon.

